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Sequential Stream Ordering for Live Co-creation in Online Video Conferences

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ABSTRACT

Current video conferencing solutions are not well-suited for live co-creation of artistic production. Different participants experiencing a different level of connection lag can lead to synchronization problems that negatively affect the quality of the co-produced experience. This disclosure describes techniques that enable a group of users participating in an online conference to produce co-created experiences, such as a music production co-created by artists in a band connecting from separate physical locations. When recording, the videoconference is switched to a stream that follows an order mutually agreed upon by the group. Users can add their individual pieces when the stream is switched to them that are mixed to create a unified production that can be streamed to an online audience and/or recorded for future use.

KEYWORDS

- Online conferencing
- Video conference
- Joint production
- Artistic co-creation
- Online concert
- Online music recording
- Live stream
- Synchronized performance
- Serial stream recording

BACKGROUND

Online conferencing tools are increasingly used by artists, such as musicians, to work on joint creation while physically apart. However, current conferencing solutions are not well-suited for live co-creation of artistic production. For instance, each participant contributing to the co-created production may experience a different level of connection lag, thus leading to synchronization issues that negatively affect the quality of the co-produced experience. Such problems are not limited to artists but are also experienced by lay users attempting to engage in activities that require synchronous coordination among multiple parties participating in an online conference. For instance, people attending a virtual birthday celebration via online conferencing find it difficult, if not impossible, to sing "Happy Birthday" in unison.

DESCRIPTION

This disclosure describes techniques that enable a group of users participating in an online conference to produce co-created experiences, such as a music production co-created by artists in a band connecting from separate physical locations. The group of users who wish to engage in co-creation first use a conventional conferencing mechanism, such as voice and/or video and/or text chat, to discuss and come to mutual agreement on the order in which individual creations will be added to the joint creation. For example, a group of musicians in a rock band can decide that their soundtrack is to be composed by combining their individual contributions in the order: Darla (drums), Bob (bass), Kimberly (keyboards), and Vikram (vocals).

After agreeing upon the order and specifying it within the conferencing application, the group of users can select a "Record" option to begin co-creating the joint production. Once the record option is selected, the conferencing application is switched with user permission from a multicast bi-directional stream to an ordered stream that follows the order specified by the group.

For instance, in the above example, the conference call first streams from Darla then from Bob followed by Kimberly, ending with Vikram. Users can add their individual pieces when the stream is switched to them. At the end, the individual pieces are mixed and synchronized to create a unified production that can be streamed to an online audience and/or recorded for future use.

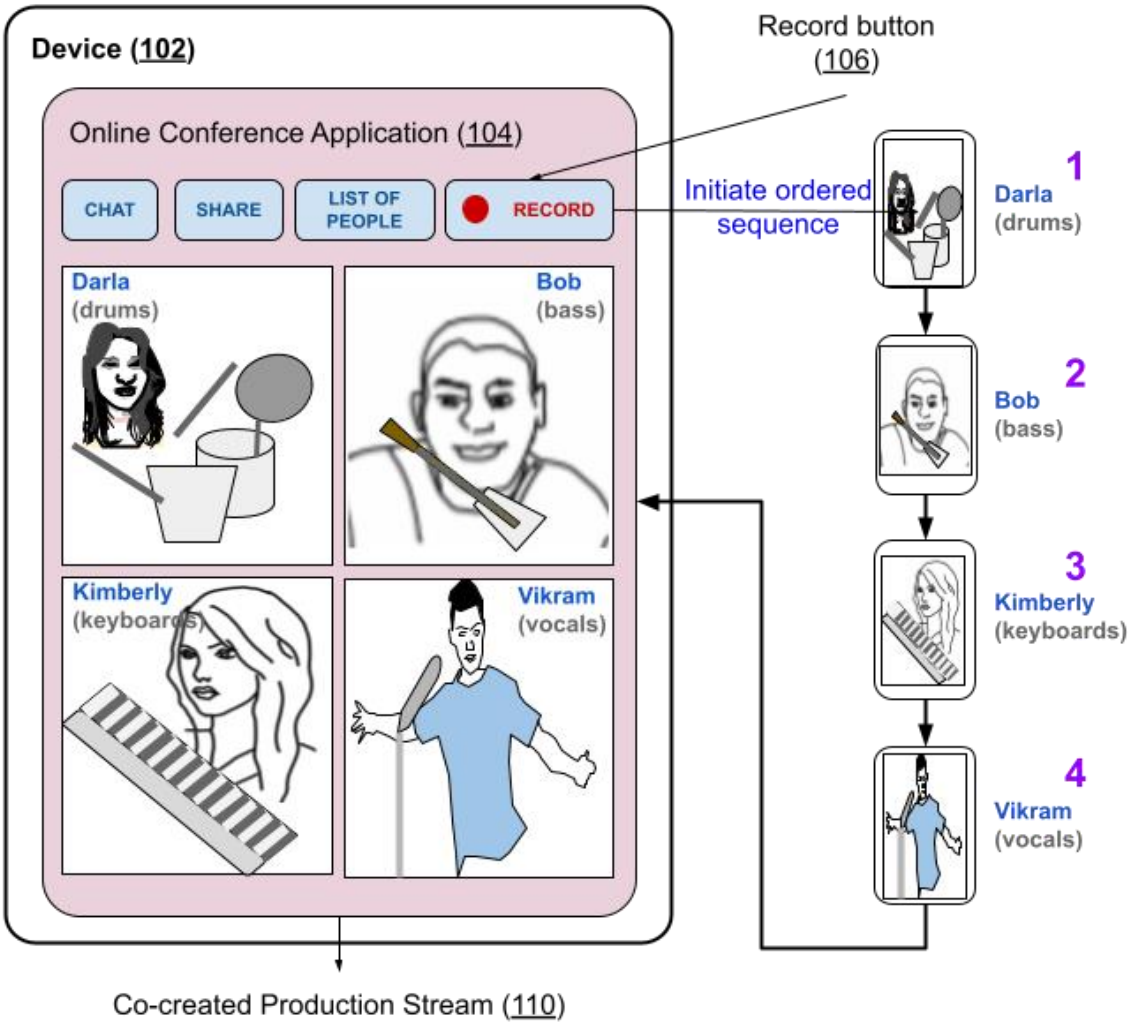

Fig. 1: Co-creating a live production during an online conferencing session

Fig. 1 shows an example of operational implementation of the techniques described in this disclosure. A group of musicians, Bob (bass guitar), Kimberly (keyboards), Darla (drums), and Vikram (vocals) are using an online conferencing application (104) on their respective

devices (102) and wish to co-create a live musical composition during the conference. They agree to ordering their individual contributions starting with Darla (1) followed by Bob (2) followed by Kimberly (3), ending with Vikram (4).

Pressing the RECORD button (106) within the application switches to the sequential mode. The stream is ordered in the sequence desired by the musician group with their permission. Upon observing Darla beating the drums to start, Bob can synchronize his part within the composition to that of Darla's. With permission, Bob's contribution is mixed in real time with that of Darla and passed on to the next person in the sequence, Kimberly. Kimberly then adds the keyboard piece, and the combined stream passes onto Vikram for singing the vocals to the drums, bass, and keyboards. The final combined stream results in the co-created production (110) that the application can stream to a live audience and/or record for later use, with user permission.

The techniques described above can support joint creation of productions by any number of physically separated contributors without loss in fidelity. The individual contributors can be located anywhere across the globe. The techniques can be used by professional artists as well as lay users who wish to co-create impromptu productions, such as joint celebrations, co-reported travel videos, etc.

With user permission, the techniques can be implemented within any conferencing application, platform, or service as well as within applications that enable users to create audiovisual recordings. Implementation of the techniques can enhance the user experience (UX) of co-creating a production over online conferencing and result in higher quality joint products for the audience.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's video conferences, social actions or activities, or a user's preferences,), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes techniques that enable a group of users participating in an online conference to produce co-created experiences, such as a music production co-created by artists in a band connecting from separate physical locations. When recording, the videoconference is switched to a stream that follows an order mutually agreed upon by the group. Users can add their individual pieces when the stream is switched to them that are mixed to create a unified production that can be streamed to an online audience and/or recorded for future use.